

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT WEST VIRGINIA**

**CRYSTAL GOOD, et al.,**

**Plaintiffs,**

**v.**

**AMERICAN WATER WORKS  
COMPANY, INC., et al.,**

**Defendants.**

**Case No.: 2:14-CV-1374**

**Consolidated with:**

**Case No. 2:14-11011**

**Case No. 2:14-13164**

**Case No. 2:14-13454**

**PLAINTIFFS' COMBINED MEMORANDUM OF LAW IN OPPOSITION TO  
DEFENDANTS' JOINT MOTION TO EXCLUDE THE EXPERT TESTIMONY OF  
HARVEY ROSEN, PH.D., AND DEFENDANTS' JOINT MOTION TO EXCLUDE THE  
EXPERT TESTIMONY OF SEWARD G. GILBERT**

Harvey Rosen, Ph.D., an economist and expert witness disclosed by the Plaintiffs, has offered opinions with respect to methods for the determination of class damages—for businesses, hourly workers, and residential class members, on both an aggregate and an individual basis—resulting from the loss of potable water during the period of the Do Not Use (“DNU”) order following the January 9, 2014 chemical spill. *See* Expert Declaration of Harvey S. Rosen, Ph.D. (“Rosen Decl.”) (previously attached as “Exh. C” to Defendants’ Joint Motion to Exclude the Expert Testimony of Harvey Rosen, Ph.D.) (Dkt. 408). Defendants jointly seek a ruling that Dr. Rosen’s opinions and testimony are inadmissible under Rule 702 of the Federal Rules of Evidence (“FRE”) and *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993) (“*Daubert*”). *See* Defendants’ Joint Motion to Exclude the Expert Testimony of Harvey Rosen, Ph.D.) (Dkt. 408).

Seward G. Gilbert, P.E., a professional engineer, is another expert witness disclosed by Plaintiffs. Mr. Gilbert also offered opinions with respect to the method for the determination of aggregate residential losses, and performed a number of data-intensive computations in calculating the estimated aggregate loss to residential class members. *See* Estimate of the Economic Impact Resulting from Loss of Residential Potable Water Service of West Virginia American Water System, January 9 through 17, 2014, Vicinity of Charleston, West Virginia, revised May 4, 2015 (“Gilbert Rev. Rep.”) (previously attached as “Exh. A” to Defendants’ Joint Motion to Exclude the Expert Testimony of Seward G. Gilbert) (Dkt. 406). Defendants also jointly seek to exclude Mr. Gilbert’s opinions and testimony under Rule 702 and *Daubert*. *See* Defendants’ Joint Motion to Exclude the Expert Testimony of Seward G. Gilbert) (Dkt. 406). Defendants’ criticisms of Plaintiffs’ proposed methods for determining and estimating aggregate residential losses are primarily addressed within their motion and memorandum to exclude Mr. Gilbert. However, because Dr. Rosen and Mr. Gilbert both offer opinions with respect to the determination of aggregate residential losses, Plaintiffs respectfully offer the instant Combined Memorandum of Law in response to both motions.

In support of their motion to exclude Dr. Rosen, Defendants argue that Dr. Rosen’s testimony and opinions are not relevant or reliable, and not supported by sufficient facts or based on incorrect facts. Defendants’ Joint Memorandum of Law in Support of Motion to Exclude the Expert Testimony of Harvey Rosen, Ph.D. (“Def. Mem. Excl. Rosen”) (Dkt. 409). In their zeal to discredit Dr. Rosen, Defendants misstate the record in multiple instances, discrediting their own arguments. For example, Defendants criticize Dr. Rosen for using an estimate of the number of businesses in the area impacted by the spill that he derived from published government sources, rather than using a lower estimate that, according to Defendants, Mr. Gilbert allegedly derived

from meter data provided by the water company. Def. Mem. Excl. Rosen at 16–17. However, the lower estimate allegedly provided by Mr. Gilbert does not appear in either Mr. Gilbert’s report or his deposition, and Defendants cite only Dr. Rosen’s own deposition testimony in which he relays a conversation he had with Mr. Gilbert, during which he was given the alleged lower estimate but was told it was incomplete and not reliable. 5/13/2015 Deposition of Harvey Rosen, Ph.D. (“Rosen Dep.”) (relevant pages attached as Exhibit 1) at 175–76. Dr. Rosen explained why the non-residential meter count would not be expected to match the number of actual establishments—using as an example a “strip mall” with one meter but “four or five establishments,” Rosen Dep. at 176—and why he preferred to use his data source, because it was based on government “census data” collected by an “independent third-party” in the business of collecting this data. Rosen Dep. at 175. *See also* Affidavit of Seward G. Gilbert (“Gilbert Aff’t”) (attached as Exhibit 2) (explaining why meter data could not produce an estimate of the number of business establishments impacted by the spill).

In other instances, Defendants’ criticisms of Plaintiffs’ experts’ methods and results are misplaced or overstated. For the reasons that follow, Defendants’ motions should be denied.

### **SUMMARY OF DR. ROSEN’S OPINIONS**

Dr. Rosen’s opinions can be separated into five categories and summarized as follows:

1. A reliable method exists for estimating the aggregate sum of the lost profits of businesses and the lost wages of hourly workers from a water utility outage. Rosen Decl., ¶¶ 14–15, 21. The method requires calculating the decline in “value added” or Gross Regional Product, which is essentially a measure of revenues minus payments to other businesses. *Id.*, ¶ 15.<sup>1</sup> The

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<sup>1</sup> *See also* 6/12/2015 Deposition of Jesse David, Ph. D. (“David Dep.”) (relevant pages attached as Exhibit 3) at 105 (“[A]nother way to think of value added is it’s revenues minus payments to

typical or average “value added” data for the various business sectors in the region impacted by the DNU order is available from a third-party supplier, a database compiled by a group known as IMPLAN. *Id.*, ¶ 16. The *decline* in “value added” attributable to the disruption of the water utility service can then be estimated using published resiliency factors, which measure the extent to which each business sector is expected to be able to continue to operate in the face of a loss of the water utility service. *Id.*, ¶ 14. The total decline in “value added” for the region during the DNU represents a reasonable and conservative (from the Plaintiffs’ perspective) estimate of the aggregate sum of lost business profits and lost wages of hourly workers. *Id.*, ¶ 15, 21.

2. The determination of the damages claims of individual businesses for losses during the DNU period can be determined following the class trial by using a simple claim form and applying a mechanical formula to standard business accounting and sales data. Rosen Decl., ¶ 20. An individual business’s damages during the DNU period consist of lost revenue minus any variable expenses avoided as a result of the slowdown or shutdown plus any additional expenses associated with the outage, such as purchases of bottled water. *Id.*, ¶¶ 14, 20; *see also* David Dep. at 99–100 (agreeing that business interruption damages for an individual business are equal to the change in revenues minus any change in costs). The loss in revenues can be determined mechanically from accounting and sales records by comparing revenues during the DNU period with the business’s revenues during a comparable period. Rosen Decl., ¶ 20. Variable and avoided labor and non-labor costs can be determined mechanically from payroll records, purchasing and other accounting records. *Id.*

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other establishments.”). Dr. David is an economist retained and disclosed by Defendants in connection with the instant case.

3. Individual claims of hourly workers for lost wages can be determined by applying a mechanical formula to payroll records, where damages equal expected earnings (determined from payroll records for comparable periods) minus actual earnings. Rosen Decl., ¶ 21.

4. A reliable and generally accepted model exists for estimating the aggregate damages to residential consumers from the loss of potable tap water during the DNU period. Rosen Decl., ¶¶ 12, 23–25. The model is premised on published studies reporting the economic value of the tap water service as a function of consumer “willingness to pay,” a measure that is analogous to the fair market value of a good or service for those goods and services that are available on the market. *Id.*, ¶¶ 12, 23–24. In the published model or formula, the “willingness to pay” value is determined by using the average consumer price elasticity of demand for tap water, a number derived from a published meta-study (a study of published studies), as one factor. The other factors are typical (“baseline”) household tap water consumption under normal conditions and the amount of water available under the conditions of the outage, shortage, or restriction. *Id.*, ¶ 23. For purposes of providing an aggregate estimate of residential losses associated with the DNU period, the average residential customer values were derived for baseline consumption and for consumption under conditions of the shortage, and then that result was multiplied by the number of households affected by the DNU order. *Id.*, ¶ 26. An appropriate adjustment was made to reflect the continued ability to use the water for non-potable purposes, primarily toilet flushing.<sup>2</sup> *Id.*, ¶ 13.

5. The same “willingness to pay” model can be used with each individual household’s actual meter data for baseline water consumption to determine individual residential claim

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<sup>2</sup> Here, again, Plaintiffs’ model is conservative from their perspective, as the water available for sanitation purposes was far from sanitary and safe, and clean water is what they bargained for in their contracts with the water company Defendants.

amounts for losses associated with the loss of potable tap water during the DNU period. Rosen Decl., ¶ 25.

Defendants take aim primarily at Dr. Rosen's opinions and methods with respect to his calculation of an aggregate damages sum for both the business losses and the hourly worker losses during the DNU period. Defendants dismiss Dr. Rosen's opinions regarding residential losses during the DNU period based on their incorrect claim that he "merely adopted Mr. Gilbert's conclusions without conducting any independent review or analysis." Def Mem. Excl. Rosen at 19. Again, Defendants distort the record. While Mr. Gilbert, a professional engineer, crunched all the numbers to calculate the values for average baseline water consumption and amount of potable water available (supplied by the government) during the DNU period, both Mr. Gilbert and Dr. Rosen testified that the economic underpinnings and validity of the residential model itself and the choices made with respect to the inputs (apart from making calculations from large amounts of data) fell within Dr. Rosen's area of expertise and opinions. Rosen Decl., ¶¶ 23–25 (discussing residential loss model); Rosen Dep. at 215 ("[T]he choice of the economic variables that went into it and the way in which it was handled . . . that would also be my opinion and I would stand by that opinion."), at 224 (explaining that the choice of elasticity values was Dr. Rosen's), and at 214–27 (discussing residential loss model inputs and opinion). Plaintiffs address all five categories of Dr. Rosen's opinions and Mr. Gilbert's residential damages opinions and computations in turn.

### **DR. ROSEN'S QUALIFICATIONS**

Dr. Rosen's qualifications as an economist are described in detail in his report. Rosen Decl., ¶¶ 7–10. Dr. Rosen earned a Ph.D. in economics and has performed and taught economic loss analyses for more than 46 years, first as a professor at Cleveland State University, and

currently as an adjunct professor at John Carroll University. *Id.*, ¶¶ 7–9. During this time, Dr. Rosen taught students the methods for valuing economic loss on both the macro and micro-economic levels that he used in this case. *See* Rosen Decl., ¶ 9; Rosen Dep. at 11–12, 17–18.

### **STANDARD OF REVIEW**

Under FRE 702, expert opinion testimony is admissible if the “witness . . . is qualified as an expert by knowledge, skill, experience, training, or education” and if the following factors are met: (1) the expert’s knowledge will assist the trier of fact; (2) the expert’s opinions are “based on sufficient facts or data”; (3) the expert’s opinions are “the product of reliable principles and methods”; and (4) “the expert has reliably applied the principles and methods to the facts of the case.” The Supreme Court has stated the trial court’s role in ruling on motions brought under Rule 702 more succinctly, as ensuring that an expert’s testimony “rests on a reliable foundation and is relevant to the task at hand.” *Daubert*, 509 U.S. at 597. “The court need not determine that the proffered expert testimony is irrefutable or certainly correct.” *United States v. Moreland*, 437 F.3d 424, 431 (4th Cir. 2006) (quoting *Cavallo v. Star Enterprises*, 100 F.3d 1150, 1158–59 (4<sup>th</sup> Cir. 1996). “Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596.

Factors that may be considered in assessing the reliability of an expert’s technique or method include (1) whether the method has been tested, (2) whether the method has been subjected to peer review and publication, (3) the method’s known or potential rate of error and whether there are standards controlling the method’s operation, and (4) whether the method is generally accepted by the relevant community of scientists or scholars. *Daubert*, 509 U.S. at

593–94. However, “the analysis must be a flexible one.” *United States v. Crisp*, 324 F.3d 261, 266 (4<sup>th</sup> Cir. 2003) (quoting *Daubert*, 509 U.S. at 594).

## **ARGUMENT**

### **I. DR. ROSEN’S AGGREGATE BUSINESS AND HOURLY WORKER ESTIMATE**

#### **A. DR. ROSEN’S ESTIMATE OF THE AGGREGATE ECONOMIC DAMAGES TO BUSINESSES AND HOURLY WORKERS IS RELEVANT.**

Defendants’ first criticism of Dr. Rosen’s method for calculating the aggregate economic damages to businesses and hourly workers is that his use of the “value added” measurement “includes extraneous inputs at both the macro and micro levels over and above the putative business class members’ lost profits.” Def. Mem. Excl. Rosen at 8. The only specific example of such an extraneous input identified in Defendants’ Memorandum is that Dr. Rosen’s model included the “value added” contributions of state and local government agencies. *Id.* at 9.<sup>3</sup>

Defendants cite to the reports of the experts retained by them to testify on this issue, and presumably intend to incorporate those additional criticisms, or at least the criticisms pertaining to any additional “extraneous inputs” (in addition to government agencies) that those experts may have identified on the pages cited by Defendants. Def. Mem. Excl. Rosen at 8 (citing to the Expert Report of Jesse David, Ph.D., (“David Report”) and the Expert Declaration of Tom S. Witt, Ph.D., (“Witt Decl.”). Both Dr. Witt and Dr. David identify the same two sticking points with Dr. Rosen’s use of “value added”—employee compensation and indirect business taxes. Dr. Witt states that “the only cost borne by the businesses would be on their gross operating surplus” but notes that “value added” potentially includes a decline in payments to “employees [who]

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<sup>3</sup> In a footnote, Defendants also criticize the model because it includes “non-profit agencies.” Def. Mem. at 9. This criticism is misplaced, because non-profit businesses and their hourly employees (and certainly revenue-generating ones such as healthcare facilities) are included, as businesses, within the business class definition.



were laid off” and “tax liabilities (most like sales, lodging and income taxes).” Witt Decl. at 6. Dr. David states that “value added” is “not a measure of business profits” but is instead equal to “business profits, plus the economic contributions of . . . government . . . plus all labor-related payments (including salaries for non-hourly employees and benefits), plus payments of indirect business taxes.” David Report at 29.

On close examination, none of these criticisms goes to the heart of Dr. Rosen’s opinion that a method exists for reliably estimating the aggregate sum of the loss to businesses and hourly workers impacted by the DNU order. The criticisms related to employee compensation (or labor-related payments) are misplaced. The decline in “value added” that represents a portion of revenues that would have been paid to hourly workers who were laid off during the DNU period are properly included because the hourly workers themselves have a claim for that loss. The decline that represents a portion of revenues that would have been paid to salaried workers, who were paid anyway, are properly included because the businesses themselves still lost the associated revenues and had to cover the payments some other way, thus suffering actual losses. The government contributions can be removed easily from the calculation and model, because they are a separate line item in Dr. Rosen’s calculation of the decline—i.e., if it is an error, it is a known error of a defined amount that can be corrected easily. Finally, the criticism that a portion of “value added” represents collections of indirect taxes such as sales and lodging taxes that are not actual business revenues may be a valid observation, but it is clearly bounded—i.e., the existence of such taxes could have inflated Dr. Rosen’s estimate by no more than the 6-7% sales tax itself, and probably less, as not all revenue-generating activity is subject to such taxes.<sup>4</sup> What

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<sup>4</sup> Dr. Witt’s mention of “income taxes,” Witt Decl. at 6, completely misses the mark, as business loss damages are not discounted under the law to adjust for income taxation. Rather, businesses may be subject to income tax on such lawsuit proceeds.

Defendants do not mention is that Dr. Rosen's use of "value added" is conservative, from the Plaintiffs' perspective, because it assumes that all non-labor costs (i.e., costs associated with payments to other businesses) were avoided in the same proportion that revenues were lost.

Unpacking these issues requires rather careful consideration of what the "value added" metric measures and comparing it to what Dr. Rosen has stated that his aggregate estimate for business and hourly worker losses includes.

**1. Decline in "value added" to businesses is a correct measurement of aggregate, combined allowable economic damages to businesses and hourly workers.**

Defendants' criticism of Dr. Rosen's use of the decline in "value added" for estimating the sum of the aggregate damages in business profits and lost hourly worker wages is that it does not exactly track what Defendants consider to be the true measure of allowable, recoverable damages for business interruption losses. Def. Mem. Excl. Rosen at 8. Defendants in their brief refer to the proper measure of business interruption damages as "lost profits," Def. Mem. Excl. Rosen at 8, and Defendants' expert referred to the proper measure as "change in revenues minus any change in costs," David Dep. at 99–100. They both argue that this measure differs from value added. However, Dr. Rosen never claimed that his estimate of the decline in "value added" was an estimate of business damages only. He claimed that it was a reasonable estimate of the *combined* damages suffered by businesses *and* hourly workers. Defendants acknowledge this in a footnote, but ignore it in the main text. Def. Mem. Excl. Rosen at 7 n. 1.

"Value added" can be defined in several ways or broken down into components along several lines. However, it appears that there are no significant disagreements between the relevant witnesses and parties. Dr. Rosen defines it as gross revenues minus intermediate product sales from business to business. Rosen Decl., ¶ 15. Defendants refer to it as a measurement of revenue minus "the cost of non-labor inputs" and state that at the business level this equates to

“the sum of employee compensation, taxes paid, and profits.” Def. Mem. Excl. Rosen at 8. Defendants’ expert David stated that it can be defined as “revenues minus payments to other establishments.” David Dep. at 105. In his report, Dr. David stated that “value added for a business” is “the difference between the business’s gross output (essentially revenues) and the cost of purchased (non-labor) inputs” and noted that it is “equivalent to the sum of employee compensation, taxes paid, and profits.” David Rep. at 13.

**a. “Value added” is primarily a measurement of the sum of employee compensation and business profits.**

Focusing first on the latter definition of “value added” for an individual business—“the sum of employee compensation, taxes paid, and profits”—it is readily apparent that Dr. Rosen’s use of it to estimate the *combined* damages to businesses (from lost profits) and hourly workers (from lost wages), rather than just lost profits for businesses, is extremely important. Setting aside taxes for a moment—which are discussed below but should represent a rather predictable 6-7% of “value added” for those businesses subject to such taxes—it follows that a short-term decline in “value added” for a business either impacts the business’s profits directly (if it continued to pay hourly employees or had mostly salaried employees), its hourly employees (if it laid them off rather than paying them), or a combination of its profits and its hourly employees. If Dr. Rosen were using the decline in “value added” to estimate just one or the other component—just lost profits or just lost wages—it would necessarily be problematic, because a decline in value added does not tell you in what proportion those two groups (business owners and employees) lost income. However, used in the way Dr. Rosen used it, it is very nearly a

perfect fit, because “value added” *is the sum of the two*—plus a predictable and small amount for sales and related taxes on revenues.<sup>5</sup>

“Value added” is not a *perfect* fit because it includes taxes associated with generating revenues, primarily sales and lodging taxes, Witt Decl. at 6, which businesses may have avoided incurring when they lost revenues. However, as noted previously, the impact of sales and lodging and any related taxes on “value added” is bounded—certainly the percentage decline in “value added” attributable to the decline in sales and service taxes would not be greater than the percentage of the taxes themselves. Therefore, any error or overestimate in Dr. Rosen’s estimate attributable to this factor would be no more than the 6-7% tax itself, and most likely less, as not all revenue-generating activities are subject to such taxes. The known or potential rate of error associated with a method is a factor that “courts ordinarily should consider” in deciding whether to admit or exclude certain evidence. *Daubert*, 509 U.S. at 594. With respect to the existence of indirect business taxes, the potential rate of error is both known and relatively small. Moreover, the possibility that some component of the aggregate estimate includes collections of sales and lodging taxes that would have gone to the government can be brought out on cross-examination and through Defendants’ experts. “Vigorous cross-examination, presentation of contrary

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<sup>5</sup> Defendants’ experts also criticized Dr. Rosen’s use of “value added” because it includes other labor-related expenses besides just wages and direct compensation, such as benefits (like healthcare premiums and 401(k) contributions) and payroll taxes, such as payments for unemployment compensation and FICA payments to the Social Security Administration. However, while this criticism may make sense to an economist, from a legal perspective workers suing for lost earnings are generally entitled to recover the cost of these fringe benefits and payroll taxes because each confers some discernible benefit for the worker. Social security benefits and unemployment compensation benefits, for example, are based at least in part on the payments made by the worker and on the worker’s behalf into the system. Thus, payroll taxes and benefits, like wages themselves, were either paid anyway by a business (creating a business loss) or their non-payment creates a compensable loss for the hourly employee.

evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking . . . admissible evidence.” *Id.* at 596.

**b. Dr. Rosen’s use of “value added” conservatively accounts for businesses’ ability to avoid non-labor costs associated with reduced output.**

The other way of defining “value added” for a business is “revenues minus payments to other establishments.” David Dep. at 105. What this definition of “value added” implies is that when Dr. Rosen—or FEMA, which also uses the “value added” approach for estimating the economic impact from utility disruptions, Rosen Decl., ¶ 15—starts with “value added” to estimate the decline in business output caused by a utility disruption, built into the method and calculation is an assumption that all non-labor costs (i.e., payments to other businesses) also declined by the same percentage as the decline in output. David Dep. at 189. This assumption is conservative (from the Plaintiffs’ and business owners’ perspective) because it is likely that businesses were unable to avoid at least some non-labor costs (such as rent) during a slowdown or shutdown of the duration at issue in this case (an average of just over six days), while some non-labor costs (such as the cost of raw materials and other inputs) declined at most by the same percentage as the decline in output or production, and it is unlikely that any non-labor costs declined by more than the decline in output. *Id.* at 187 (agreeing that with respect to the handling of “payments to businesses” Dr. Rosen’s method has “one small element of conservatism”); *id.* at 190–91 (agreeing that costs associated with payments to other businesses would be expected to decline by no more than the decline in revenues).

**2. Government is a separate line item in the IMPLAN data and can be removed or disaggregated from the calculation without a Comcast problem.**

Defendants also criticize Dr. Rosen’s method and use of “value added” on the grounds that it includes contributions from “governmental entities” that are not included in the Plaintiffs’

proposed business class. Def. Mem. Excl. Rosen at 9. In fact, Dr. Rosen's inclusion of government agency contributions to "value added" is the *only* example of an "extraneous input" in his estimate that Defendants identify in their Memorandum. Valid or not, the criticism does not discredit the method or the model itself, only the inclusion of a single sector, literally a single line item in Dr. Rosen's spreadsheet, which can easily be deleted and subtracted from the total. Rosen Decl., Appx. Table 5 (showing under "Industry Code 35" the precise impact of the inclusion of the government sector in his estimate). While Defendants' expert, Dr. David, would neither admit nor deny that Dr. Rosen's calculation could be modified easily and corrected to show only the losses attributable to non-government businesses, David Dep. at 174, it clearly can be. The corrected estimate would simply involve subtracting the "economic impact per establishment per day of lost water services in 2013\$" attributable to the government and government industry sector (\$160.41) from the total "impact per day (2013\$)" figure (\$1,510.19), Rosen Decl., Appx. Table 5, and running the rest of the calculation from the new per establishment per day (2013\$) figure of \$1349.78 rather than \$1,510.19. The adjusted total estimate for the combined damages to businesses and hourly workers is \$69,337,315 rather than \$77,573,627.

Plaintiffs' burden at this stage is to demonstrate that a reliable methodology exists for estimating the aggregate class damages—in the instant context, the combined aggregate damages for businesses and hourly workers during the DNU period. Plaintiffs have done that, and the fact that the estimate that Dr. Rosen has provided may need to be refined by subtracting a single line item should not change that analysis, so long as it is clear that the refinement is simply a matter of rote arithmetic. Recently, the United States Supreme Court held that while "[c]alculations need not be exact" at the class certification stage, "any model supporting a plaintiff's damages

case must be consistent with its liability case.” *Comcast Corp. v. Behrend*, 133 S. Ct. 1426, 1433 (2013) (“*Comcast*”) (internal citations omitted). Here, Dr. Rosen’s calculation of damages is consistent with Plaintiffs’ theory of liability, and, to the extent it may be inconsistent with the class definition (because it included government agencies), it can be disaggregated readily.<sup>6</sup>

**3. Proof of aggregate classwide economic damages is relevant and admissible even if subsequent proceedings may be necessary to determine individual claim amounts.**

Defendants take issue with Dr. Rosen’s opinion that the post-trial determination of individual damages claim awards will require the review of individual claim forms and possibly claimants’ accounting or payroll records. Def. Mem. Excl. Rosen at 9–10. Defendants argue that Dr. Rosen’s acknowledgement of the need to rely on information provided by individual claim forms to determine individual claim amounts is equivalent to an admission that his aggregate damages method is “speculative or arbitrary,” and thus inadmissible under *Comcast*. Def. Mem. Excl. Rosen at 10.

Defendants’ argument is baseless. Dr. Rosen’s acknowledgement of the need to rely on information provided by individual claim forms to determine individual claim amounts is not an indication or admission that his aggregate damages model is speculative or arbitrary. It is, rather, an acknowledgement that the data he used to calculate aggregate damages—while providing detailed information on the number of establishments in the impacted area, their breakdown by

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<sup>6</sup> In *Comcast*, on the other hand, not only were damages attributable to the theory of liability that the class was pursuing aggregated with damages potentially attributable to other theories of liability that the class was not pursuing, but also those damages were aggregated in a way that did not permit them to be disaggregated. *Comcast*, 133 S. Ct. at 1434–35 (“permutations involving four theories of liability and 2 million subscribers located in 16 counties are nearly endless”). In other words, if the damages model at issue in *Comcast* contained four separate line item estimates of damages, each attributable to a different one of the four theories of liability—and therefore capable of easy disaggregation—it does not follow that the model would have been insufficient to support class certification on only one theory of liability simply because the expert totaled all four categories in the last line of his estimate.

sector, and the aggregate “value added” contribution of each sector—does not provide detailed information as to each establishment sufficient to determine that establishment’s own contribution to “value added.” Moreover, while the resiliency factors that Dr. Rosen used to estimate the decline in “value added” for each sector have been tested, published, and proven to be reliable on an aggregate or statistical basis, they may or may not be sufficiently accurate at the level of individual businesses to justify reliance on the application of those factors to each business based on its anticipated output. Some mechanical cross-check in the interest of ensuring accuracy on a claims-made basis may be appropriate.

In other words, Dr. Rosen’s method and estimate is based on statistical data and statistical averages, but that does not make it speculative or arbitrary. Such statistical estimates of aggregate damages are sufficient to satisfy Plaintiffs’ burden to “show the extent of the damages as a matter of just and reasonable inference, although the result be only approximate.” *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282 U.S. 555, 563 (U.S. 1931). *Comcast* does not change this rule. *Comcast*, 133 S. Ct. at 1433 (damages calculations “need not be exact”). *Comcast* simply holds that any damages estimate must measure only those damages attributable to the theory or theories of liability at issue in the litigation, as Dr. Rosen has done.

*Comcast* also did not change the general rule that damages in class actions “may be determined on a classwide, or aggregate, basis . . . where computerized records, supplemented by claims forms, provide a means to distribute damages to injured class members in the amount of their respective damages.” *In re NASDAQ Market-Makers Antitrust Litig.*, 169 F.R.D. 493, 526 (S.D.N.Y. 1996); accord *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 534 (6<sup>th</sup> Cir. 2008). Problems with the use of class-wide or aggregate damages estimates arise when there is no way to determine individual damages claims amounts and distribute them to class members, and



plaintiffs instead propose some sort of “fluid recovery”—meaning that the aggregate damages award would be distributed either on the basis of *cy pres* to non-class members or as a windfall to certain class members in excess of actual damages. *NASDAQ*, 169 F.R.D. at 525 (“Fluid recovery refers to the distribution of unclaimed or unclaimable funds to persons not found to be injured but who have interests similar to those of the class.”); *Scrap Metal*, 527 F.3d at 534.

In *Windham v. American Brands, Inc.*, 565 F.2d 59, 66 (4<sup>th</sup> Cir. 1977), the Fourth Circuit flatly rejected the use of an aggregate damages estimate that would result in a “fluid” recovery. However, courts interpreting the *Windham* decision have not done so to prohibit the use of class-wide or aggregate damages estimates in support of certification or at trial where, as here, individual damages amounts can be determined post-trial, thus avoiding the fluid recovery problem. *In re Titanium Dioxide Antitrust Litig.*, No. 10-0318, 2013 U.S. Dist. LEXIS 62394, at \*53–55 (D. Md. May 1, 2013) (distinguishing *Windham* on fluid recovery grounds and citing W. Rubenstein, et al., *Newberg on Class Actions*, § 10.7 (2012), in support of decision to permit class-wide proof of damages at trial with post-trial determination of individual damages).

#### **B. DR. ROSEN’S TESTIMONY AND OPINIONS ARE RELIABLE AND BASED ON GENERALLY ACCEPTED AND WIDELY USED METHODOLOGY**

Defendants’ attack on Dr. Rosen’s methodology mischaracterizes his testimony as “based on a hybrid of the methodology utilized in the ATC Study and Brozovic Paper, which were provided to him by plaintiffs’ counsel.” Def. Mem. Excl. Rosen at 11. Defendants cite to page 20 of Dr. Rosen’s deposition, but there Dr. Rosen actually was asked whether his method was based on the one described in the Brozovic paper or the model used by “FEMA.” Rosen Dep. at 20. Dr. Rosen answered that the two were related, that the method described by Brozovic for estimating residential losses was adapted by FEMA for that purpose, and that he used the “FEMA approach” for estimating business losses, which he describes as having been adapted from other

economists. *Id.* Nowhere does Dr. Rosen refer to the ATC Study or say that he combined the approaches of FEMA and Brozovic (one was for residential losses, the other for business losses).

Defendants then attack this “hybrid methodology” straw man, arguing it is “completely new in the field of economics or law.” Def. Mem. Excl. Rosen at 12. Defendants also incorrectly cite to their own expert, Dr. Witt, for the proposition that the “traditional methodologies for measuring an economic impact on a group of businesses require an individual evaluation of each business’ [sic] lost profits.” Def. Mem. Excl. Rosen at 11 (citing Witt Decl. at 2). In fact, Dr. Witt did not state in his report that the “traditional methodology” for measuring economic impact on a group of businesses requires individual evaluation of each business. Rather, he stated that, in his opinion (he didn’t cite or identify any other source in support of the opinion), one should take the individual characteristics of businesses into account in this instance, not that doing so is the “traditional method.” Witt Decl. at 2.

Dr. Witt himself does not appear to take into account the individual characteristics of businesses in his economic impact estimating work, which primarily involves estimating the economic impact of construction projects and schools. 6/26/2015 Deposition of Dr. Witt (“Witt Dep.”) (relevant pages attached as Exhibit 4 at 23–38). Dr. Witt testified that he has never conducted a study on the potential or actual economic impact of a natural disaster (which frequently disrupt utility services), a terrorist attack (which also can disrupt or potentially disrupt utility services), or a potential or actual disruption of a utility service. Witt Dep. at 45–50. He admitted that he did not do any independent research (apart from reviewing the papers in Dr. Rosen’s references) as to what methods economists traditionally use to estimate the economic impact to businesses from utility service interruptions or natural disasters. Witt Dep. at 55–56.

Dr. Rosen, on the other hand, did determine what methods are typically used by economists and others, including the Federal Emergency Management Agency (“FEMA”), for estimating the impact on businesses from natural disasters and utility service interruptions. *See* Rosen Dep. at 77–91 (describing his investigation and research into methods and data available for estimating business losses). In order to estimate the aggregate losses to businesses and their hourly employees Dr. Rosen first obtained and relied on county-level data relating to the Gross Regional Product (“GRP”)—or “value added”—for the area impacted by the spill. The source of the data was from a company IMPLAN, which compiles data from government sources, collects it, and sells it such that can be disaggregated into sectors at the county level, rather than just the national or state level. Rosen Decl., ¶ 16 n. 16. The use of this kind of data, and specifically of data from IMPLAN, is standard and generally accepted within the economics community for estimating the regional or local impact of water utility disruptions, natural disasters, and terrorist attacks. *See* Rosen Dep. at 79–81 (confirming from multiple sources that the IMPLAN database is the standard data to use for this kind of analysis); Rosen Dep. at 81–82 (noting that IMPLAN data is collected from published government sources such as Bureau of Economic Analysis); *see also* Rose, et al., Modeling Regional Economic Resilience to Disasters: A computable general equilibrium analysis of water service disruption, *Journal of Regional Science*, vol. 45, 75–112 (2005) at 91 (published, peer-reviewed study using IMPLAN database to estimate regional economic impacts from disruption to water supply in Portland) (relevant pages attached as Exhibit 5).

The approach that Dr. Rosen used in estimating the *decline* in GRP from the disruption of the potable water utility service was to take standard, published “importance factors” —also referred to as “resilience factors”—for each business or industrial sector and apply those factors

to the local GRP data obtained from IMPLAN. Rosen Decl., Appx. Table 5. The resilience factors used by Dr. Rosen are referred to as the “ATC-25” factors, which were developed for FEMA, and were published by the Applied Technology Council, in “Seismic Vulnerability and Impact of Disruptions of Lifelines in the Conterminous United States” (1991). Dr. Rosen’s approach is essentially the same approach that FEMA uses for estimating the economic impacts to businesses resulting from utility service interruptions. *See* FEMA Benefit-Cost Analysis Re-engineering (BCAR): Development of Standard Values, Version 6.0 (December 2011) (“FEMA BCAR”) at 39–40 (relevant pages attached as Exhibit 6). FEMA also uses the ATC-25 factors, and, as recently as December 2011, FEMA described the ATC-25 “importance factors” as “widely used in this type of study.” *Id.* at 39.

The main difference between Dr. Rosen’s approach and FEMA’s is that FEMA uses only national Gross Domestic Product data rather than local GRP data. FEMA generates a single per capita per day impact estimate that it can then apply for its purposes across the country without regard for local variance, while Dr. Rosen used local (county level) data from IMPLAN, and adjusted it to fit the actual service area at issue by including only Culloden in Cabell County and by excluding St. Albans from Kanawha County.<sup>7</sup> Rosen Decl., ¶ 16. However, even FEMA itself observed that the use of more local GRP data was standard in studies of local impacts. FEMA BCAR at 39 (studies of water service disruption typically use GDP, or Gross State Product data when studies are focused on smaller geographical area, to estimate economic impact on commercial and industrial customers).

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<sup>7</sup> Dr. Rosen also obtained the number of establishments from the Bureau of Labor Statistics and presented the impact as per establishment per day rather than per capita per day. Rosen Dep. at 89–91.

Defendants run through the *Daubert* reliability factors glibly, declaring at each turn that Dr. Rosen’s method fails because it is a hybrid method created just for this case. Def. Mem. Excl. Rosen at 12. However, Dr. Rosen’s methodology—taking local GRP data as a baseline and then applying the ATC-25 resilience factors to estimate the decline in GRP resulting from the water service disruption—is, in fact, *the standard method* for determining the economic impact to businesses from a water service disruption. FEMA itself notes that the ATC-25 resilience factors used by Dr. Rosen are “widely used in this type of study” and that “studies typically use GDP data [or more local value added or GRP data] to estimate economic impact on commercial and industrial customers.” FEMA BCAR at 39. Dr. Rosen’s method also has been subjected to publication and peer-review, including in the government publications cited above.

The local data that Dr. Rosen selected for determining the GRP of the affected area, the IMPLAN data, is the gold standard for use in these kinds of studies. Rosen Dep. at 79–82. The IMPLAN economic data used by Dr. Rosen is simply data compiled from government sources, and so it has relatively little, if any, error rate.

Defendants concede that the ATC-25 resilience factors have been published, peer-reviewed, and tested. Def. Mem. Excl. Rosen at 11–12. These factors have been tested by comparison to other studies of resilience factors following disruptions of the water supply. Most notably, the ATC-25 factors have been compared to the resilience factors that were published and derived by Chang, et al., in “Linking infrastructure and urban economy: simulation of water disruption impacts in earthquakes,” *Environment and Planning*, vol. 29:281–301 (2002) (“Chang Study”) (attached as Exhibit 7). In a review published by the American Water Works Association, two analysts found that, “In all situations, the Chang et al. (2002) resiliency factors present a higher loss estimate.” See Aubuchon and Morley, Lessons from Short-term Supply

Disruptions: Providing Confidence and Context to FEMA’s Methodology (“Aubuchon Study”) (relevant pages attached as Exhibit 8) at 13. “This suggests that the ATC-25 figures may have overestimated the resilience of certain professional services and therefore underestimated the economic value of water in those settings.” *Id.* In other words, the ATC-25 factors have been tested and found to be, if anything, conservative (from the Plaintiffs’ perspective) with respect to the estimate of economic losses resulting from water service disruptions. Thus, the known error rate associated with the use of Dr. Rosen’s method, including his use of the ATC factors, tends towards underestimation, the opposite of what would hypothetically infringe on the rights of Defendants.

**C. DR. ROSEN’S AGGREGATE BUSINESS AND HOURLY WORKER ESTIMATE IS BASED ON SUFFICIENT FACTS AND DATA**

Lastly, Defendants attack Dr. Rosen’s aggregate business and hourly worker loss estimate by attacking the underlying facts and data he used. Each argument is addressed in turn.

**1. The ATC factors are widely used, have been tested, and, if anything, tend to underestimate losses in the services sectors.**

Defendants criticize Dr. Rosen’s use of the ATC-25 factors on the grounds that the data is from 1991, and from an earthquake in California, and that those circumstances are therefore different and do not translate to West Virginia in 2014. Def. Mem. Excl. Rosen at 14. Defendants also claim that the factors were developed in connection with a disruption of longer duration. *Id.* at 14 n. 3. Defendants’ arguments fail for several reasons.

First, notwithstanding the age of the study, the ATC factors are still “widely used” and standard for these kinds of studies. *See* FEMA BCAR at 39. Second, the ATC factors were tested in the Aubuchon Study by comparing them to the Chang Study, a more recent (2007) study that looked at the short-term (less than one week) and longer duration impacts of water disruption

events on businesses in California and Memphis, Tennessee. *See* Chang Study, Table 3, at 293 (listing short-term resilience factors averaged from surveys in Memphis and California). The Chang Study found that professional services in Memphis and California were impacted to a greater extent than in the ATC study, even with respect to disruptions of less than one week. *See* Aubuchon Study at 13; Witt Dep. at 205–08; Chang Study, Table 3, at 293. Thus, any error in Dr. Rosen’s estimate associated with the use of the ATC factors would tend towards an underestimation of the loss, rather than an overestimation. Third, Defendants note that the relative contributions of the various sectors to the overall economy may have changed since 1991, noting in particular that the service sectors may have increased in importance at the expense of manufacturing, utilities, and retail trade. Def. Mem. Excl. Rosen at 14. This observation, even if true, is irrelevant. Dr. Rosen did not rely on the ATC factors, nor on data from California circa 1991, for the relative contributions of the various sectors to GRP. He relied on IMPLAN data for Boone, Cabell, Kanawha, Lincoln, and Putnam Counties in 2013. Rosen Decl., Appx. Table 5. The ATC factors are used to estimate the percentage decline in any given sector associated with water service disruption, not the relative contribution of any given sector to the overall economy.

**2. Dr. Rosen’s 100 percent loss of water estimate was appropriate.**

Defendants argue that Dr. Rosen improperly used 100% loss of water rather than adjusting the percentage downward to reflect that water was still available for certain non-potable uses, including toilet flushing, and (incorrectly) characterize that use as encompassing all of “sanitation.” Def. Mem. Excl. Rosen at 14. (Sanitation includes hand-washing, food cleaning and preparation, and other practices that reduce the spread of disease, which generally require clean water.) Dr. Rosen explained in his deposition that the studies and factors are for loss of

*potable* water and that the ability of businesses to continue to function with non-potable water is included in the resilience factors. Rosen Dep. at 112–14.

**3. Dr. Rosen’s estimate of the number of days business class members were subjected to the DNU order was reasonably based on the best available evidence.**

Defendants criticize Dr. Rosen for using an estimate of the number of days businesses were impacted by the DNU that was derived from census data looking at the distribution of population, not business establishments. Def. Mem. Excl. Rosen at 15. This attack fails as well. First, there was no better data available on the distribution of businesses, thus there was no better way for Dr. Rosen to make the estimate. Second, the assumption that the distribution of businesses resembles the distribution of residents is reasonable over any area larger than a few city blocks.

Defendants also criticize Dr. Rosen for not considering the potential influence of the weekend of January 11–12, 2014, on the estimate of the number of days. This misunderstands the nature of Dr. Rosen’s estimate of daily contributions to “value added.” The annual “value added” is not divided by the number of business days in a year, but by the number of total days. The average duration of the DNU order, 6.12 days, encompasses almost a full calendar week, and therefore the impact of whatever days certain establishments close during that week would be minimized. Moreover, while some businesses close for weekends, others do substantial business on the weekends, which is another example of why Dr. Rosen’s aggregate estimate is reliable, and individual claims forms will be used to determine individual awards.

**4. Dr. Rosen’s calculation of the number of businesses in the area was based on reliable government data and no better data was available.**

Defendants next criticize Dr. Rosen for using an estimate of the number of business establishments impacted by the service disruption that is different than the estimate of the



number of business establishments that Mr. Gilbert allegedly provided to Dr. Rosen based on incomplete water meter data. Def. Mem. Excl. Rosen at 16–17. This criticism was already addressed in the introduction above. Dr. Rosen obtained his estimate of the number of business establishments from data collected by the Bureau of Labor Statistics. Rosen Dep. at 89–93. The lower estimate allegedly provided by Mr. Gilbert was not in either Mr. Gilbert’s report or his deposition, and Defendants cite nothing in support of this alleged estimate. Dr. Rosen explained that, in his conversation with Mr. Gilbert about the subject, Mr. Gilbert said that any estimate based on the meter data was necessarily incomplete and that he was not able to get a reliable estimate from it. *Id.* at 175–76. Dr. Rosen even explained why the non-residential meter count would not be expected to match the number of actual establishments—using as an example a “strip mall” with one meter but “four or five establishments.” Rosen Dep. at 176; *see also* Gilbert Aff’t. Dr. Rosen explained that he preferred to use his data source, because it was based on government data collected by an independent third-party in the business of collecting this data. Rosen Dep. at 175.

Citing *Tyger Constr. Co. v. Pensacola Constr. Co.*, 29 F.3d 137 (4<sup>th</sup> Cir. 1994) (“*Pensacola*”), Defendants argue, first, that courts should take a closer look at opinions that consist of “an array of figures,” Def. Mem. Excl. Rosen at 6, and, second, that an experts’ opinion can be excluded when it is based on insufficient facts or data, *id.* at 13. In *Pensacola*, the Fourth Circuit rejected the damages opinions from an “expert” (who was also a party) on the basis that they were based on nothing other than the party/expert’s own speculation, specifically distinguishing a case in which an expert’s opinion was deemed admissible because that expert had relied on data from the U.S. Bureau of Census. *Pensacola*, 29 F.3d at 144 (discussing *Clinchfield R.R. v. Lynch*, 784 F.2d 545 (4<sup>th</sup> Cir. 1986)). Thus, the Fourth Circuit’s analysis in

*Pensacola* actually provides support for Dr. Rosen's methodology, and, in particular, provides clear support for Dr. Rosen's decision to use government data collected by the Bureau of Labor Statistics rather than an incomplete estimate from some other source.

**5. Dr. Rosen's use of average estimates for class-wide damages is sound and permissible.**

Defendants argue that Dr. Rosen impermissibly assumed that all businesses in the class suffered a loss "by an amount equal to the percentage value of the ATC study's loss factor." Def. Mem. Excl. Rosen at 17. This is improper, they argue, because the ATC loss factors are intended to be "used to estimate average effects across entire regions and economic sectors." *Id.* This is a misunderstanding of what Dr. Rosen's estimate represents and what it is being offered for. It is being offered for class-wide proof of aggregate damages, with the understanding that determination of individual payments to businesses will follow from additional information provided by claims forms. Part I.A.3, *supra*. The use of averages for determination of class-wide aggregate damages is permissible, so long as Plaintiffs prove that there exists some method for determining individual damages, even with the aid of claims forms in a second process, rather than some form of fluid recovery. *See NASDAQ*, 169 F.R.D. at 526; Part I.A.3, *supra*.

Defendants' suggestion that some class members may have suffered no damages is truly baseless. The class is defined as the owners of businesses "supplied tap water by the KVTP." While it is conceivable that a handful of those businesses may have been closed for the entire duration anyway, and therefore experienced no loss, the possibility of a very small number of class members without injuries is generally insufficient to defeat an otherwise valid class. *NASDAQ*, 169 F.R.D. at 523 ("Even if it could be shown that some individual class members were not injured, class certification, nevertheless, is appropriate where the [defendants' conduct]

has caused widespread injury to the class.”). Here, again, the use of a claims process to validate and pay claims protects Defendants and precludes claimants from claiming windfall recoveries.

**6. The possibility of seasonal variations does not invalidate Dr. Rosen’s model.**

Lastly, Defendants argue that Dr. Rosen’s estimate should be excluded because he did not adjust for seasonal variations in sector GRP. Dr. Rosen acknowledged that it was impossible to adjust for seasonal variability, because the data is not broken down by month or quarter. Rosen Dep. at 132–134. Given the resilience factors associated with the sectors that would be expected to exhibit seasonal variations, Dr. Rosen characterized the impact of any seasonality as insignificant. *See id.* at 133.

**II. DR. ROSEN’S AND MR. GILBERT’S RESIDENTIAL ECONOMIC LOSS OPINIONS**

**A. DR. ROSEN’S OPINION REGARDING THE ALLEGED ECONOMIC IMPACTS TO PUTATIVE RESIDENTIAL CLASS MEMBERS IS RELIABLE**

Defendants dismiss Dr. Rosen’s opinions regarding residential losses during the DNU period based on their incorrect claim that “Dr. Rosen merely adopted Mr. Gilbert’s conclusions without conducting any independent review or analysis.” Def. Mem. Excl. Rosen at 19. That is inaccurate. While Mr. Gilbert, a professional engineer, did the number-crunching to calculate values for average baseline water consumption and amount of potable water available from the government during the DNU period, the validity of the residential model itself and the choices made with respect to the inputs (apart from the crunching of numbers from large amounts of data) fell within Dr. Rosen’s area of expertise. Rosen Decl., ¶¶ 23–25; Rosen Dep. at 214–27.

In support of their argument that “Dr. Rosen merely rubber stamped Mr. Gilbert’s opinion,” Defendants only point out that “Dr. Rosen failed to notice the \$23 million miscalculation by Mr. Gilbert that required revision of his report.” Def. Mem. Excl. Rosen at 20. However, the \$23 million miscalculation by Mr. Gilbert was the result of a mistaken Microsoft

Excel entry (which was then repeated thousands of times in thousands of linked entries) in Mr. Gilbert's attempt to calculate the average baseline consumption for residential customer class members from several years of monthly meter readings for approximately 52,000 residential customer addresses. See 5/7/2015 Deposition of Seward G. Gilbert ("Gilbert Dep.") (relevant pages attached as Exhibit 9) at 120–22. Thus, the mistake occurred within one of Mr. Gilbert's area of expertise (number-crunching) and not Dr. Rosen's. Moreover, as it happens, Mr. Gilbert's mistake in his calculation resulted in an average for the class members at issue of 70 gallons per day, which was completely consistent with the 69.3 gallon published average indoor per capita use in the United States (it appears that residential customers in this area use considerably less water than their national counterparts), which Dr. Rosen noted in his report. *See Rosen Decl.*, ¶ 13.

Defendants otherwise defer their "detailed discussion of the unreliability of" Plaintiffs' experts' residential economic loss estimate to Defendants' Joint Motion to Exclude the Expert Testimony of Seward G. Gilbert [Dkt. 406] and the accompanying Memorandum ("Def. Mem. Excl. Gilbert") [Dkt. 407]. Because Plaintiffs offer both Dr. Rosen and Mr. Gilbert to testify with respect to their roles in the residential loss estimate—and principally rely on Dr. Rosen to defend the method's reliability as an economic estimate—Plaintiffs offer this combined response.

**1. Dr. Rosen's and Mr. Gilbert's opinions and methodology with respect to the calculation of residential losses are reliable.**

To recap, Dr. Rosen testified that a reliable and generally accepted model exists for estimating aggregate damages to residential consumers from loss of potable tap water during the DNU period. *Rosen Decl.*, ¶ 12, 23–25. The model is premised on published studies reporting the economic value of the tap water service as a function of consumer "willingness to pay," a measure analogous to the fair market value of a good or service for those goods and services that

are available on the market. *Id.*, ¶¶ 12, 23–24. The formula used to estimate residential losses in this instance came from a 2007 publication. *See* Brozovic, et al., Estimating business and residential water supply interruption losses from catastrophic events, *Water Resources Research*, v. 43 (2007) (“Brozovic Study”) (attached as Exhibit 10). In this model, the “willingness to pay” value is determined by using the average consumer price elasticity of demand for tap water, a number derived from a published meta-study (or a study of published studies), as one factor. The other factors are baseline household tap water consumption and the amount of water available under conditions of the outage, shortage, or restriction. Rosen Decl., ¶ 23.

To provide an aggregate estimate of residential losses associated with the DNU period, average residential customer values were derived for baseline consumption and for consumption under conditions of the shortage by Mr. Gilbert from the meter readings of West Virginia American Water Company<sup>8</sup> and government records, and then that result was multiplied by the number of households affected by the DNU order. Rosen Decl., ¶ 26. An appropriate adjustment was made to baseline water consumption to reflect the ability to use water for non-potable purposes, primarily flushing, and thus modeled solely the lost value of potable water. *Id.*, ¶ 13.

Dr. Rosen explained that individual claim amounts would be determined by individual application of this formula—based on their own household data such as baseline consumption—after the class-wide trial. Rosen Decl., ¶ 25. He did not describe the method for doing so in much detail, nor did he need to, because his approach is based on a “mechanical application” of the same formula, just with a few necessary pieces of customer information (dates living at address; number of persons in household) obtained from a claim form. *Id.*

**2. The Brozovic Study formula was intended to be used to estimate the value of the loss of residential tap water following an interruption in service such as this one.**

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<sup>8</sup> This is the calculation where Mr. Gilbert’s computational mistake occurred.

Defendants claim the authors of the Brozovic Study did “not discuss the use of this methodology to calculate *actual* damages from *real* events.” Def. Mem. Excl. Gilbert at 5. That claim is incorrect. The authors of the Brozovic Study state that their methodologies are for the estimation of the impacts of water supply interruption and disruption on businesses and residential welfare. Brozovic Study at 1 and 13. “Our . . . residential welfare loss methodologies . . . are spatially disaggregated so that damage estimates can be compared across regions with different patterns of business and residential water users and disruptions.” *Id.* at 1. The methodology is not intended to be limited to earthquakes: the technique presented “is widely applicable . . . to other shocks, such as hurricanes, tornados, or terrorist attacks.” *Id.* at 2.

That the authors mention in the introduction that residential welfare losses should be “included in disaster mitigation planning” does not mean the methodology is intended only to be applied to hypothetical situations. That is merely an example of an application. Anyway, disaster mitigation planning benefits from the estimation of “actual” economic impacts from “real events” just as much, if not more, than from estimation of impacts from hypothetical scenarios.

**3. Under West Virginia law damages for loss of use of goods and services can be reduced to calculation where it is susceptible of calculation.**

Defendants, relying on *Wilt v. Buracker*, 443 S.E.2d 196, 191 W. Va. 39 (1993), insist that the damages at issue in Dr. Rosen’s and Mr. Gilbert’s estimate of residential losses—damages attributable to the loss of a good or service, tap water, that is sold in exchange for money—are necessarily “general” damages and that they therefore cannot be valued by expert opinion, but must be left to the jury to value. Def. Mem. Excl. Gilbert at 7. However, *Wilt* concerned an opinion regarding economic calculations of the value of “loss of enjoyment of life.” 443 S.E.2d at 200. “Enjoyment of life”—unlike tap water—is not a commodity or service

that can be bought and sold, under any circumstances, even hypothetical ones. Of course, products and services that can be bought and sold *contribute* to one's enjoyment of life, including tap water, which is presumably why people buy them, but *Wilt* neither contains nor implies any prohibition against valuing those products and services by economic calculation.

Moreover, as one might expect given the subject in *Wilt*—the value of the “enjoyment of life”—the studies underpinning the economic calculation were not based on surveys or prices of “enjoyment of life” itself, much less on the value of avoiding the particular permanent injury the plaintiff at issue suffered. *Wilt*, 443 S.E.2d at 204 (“[T]he willingness-to-pay studies did not use methodology designed to calculate the loss of enjoyment of life.”). The calculation was based, rather, on studies that were used to estimate the value of the “whole life.” *Id.* at 204 (describing “whole-life value” calculation used to extrapolate loss of enjoyment); *id.* at 204–205 (discussing underlying “wage-versus-risk” studies used to value life). In *Wilt*, consistent with other courts, the Court rejected the extrapolation, ruling categorically that “enjoyment of life,” like pain and suffering, cannot be subjected to economic calculation or monetary value. The *Wilt* Court made a critical distinction between losses that can and cannot be calculated: “[T]he question of loss of enjoyment of life” should be viewed, like pain and suffering, “in terms of a *subjective jury evaluation issue rather than as an objective calculable item.*” *Id.* at 206 (emphasis added).

This distinction is critical because losses that can never be subjected to economic calculation are exactly those losses that must be evaluated subjectively by a jury. However, losses that may be subjected to economic calculation, such as loss of use of real estate (or a feature or portion of real estate), a product, or a service, are losses that must be viewed objectively. *Kirk v. Pineville Mobile Homes*, 310 S.E.2d 210, 212, 172 W. Va. 693, 695 (1983) (damages for loss of use of real property must be measured objectively); *Jarrett v. E.L. Harper*

& Son, Inc., 235 S.E.2d 362, 365, 160 W. Va. 399, 404 (1977) (damages for temporary loss of use of water well on property must be measured by “an objective standard”).

Defendants’ reliance on the *Jarrett* holding that damages associated with the loss of use of real property must be “measured by an objective standard of ordinary persons acting reasonably under the given conditions” is misplaced. The decision and reasoning strongly supports Plaintiffs’ position that the proper measure of damages for loss of the tap water service is based on an *objective* measure of the value of tap water—i.e., the published average consumer valuation of tap water, reflected in the average value for the price elasticity of demand—rather than on a jury’s *subjective* evaluation as to how much the tap water service was worth to each individual customer or household, based on that customer’s or household’s peculiar, subjective circumstances. *See Jarrett*, 235 S.E.2d at 365; *accord Kirk*, 310 S.E.2d at 212–13. The *Jarrett* Court did find that damages associated with the loss of the use of a water well on the plaintiff’s property could be, under certain circumstances, based on a jury’s consideration of annoyance and inconvenience, rather than a strict calculation of monetary value, so long as the measure was “objective.” 235 S.E.2d at 365. However, unlike the evaluation of damages for loss of enjoyment of life at issue in *Wilt*, or the evaluation of damages for pain and suffering at issue in *Crum v. Ward*, 122 S.E.2d 18, 146 W. Va. 421 (1961),<sup>9</sup> the use of the jury’s judgment rather than a strict monetary calculation in situations involving the loss of use of property or a service is merely *permitted* under certain circumstances, not mandatory. As the Supreme Court explained:

Ordinarily, loss of use is measured by lost profits or lost rental value. When that standard is *difficult to apply* because the property in question is not used commercially, it *may be necessary* to formulate a measure of damages that is more uniquely adapted to the plaintiffs’ injury. Thus, we find that annoyance and inconvenience are properly considered as elements in the measure of damages that plaintiffs are

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<sup>9</sup> This is the other case relied upon by Defendants. Def. Mem. Excl. Gilbert at 7.



entitled to recover, provided that these considerations are measured by an objective standard of ordinary persons acting reasonably under the given conditions.

*Jarrett*, 235 S.E.2d at 365 (emphasis added). That indicates that damages for loss of a good or service or portion of real estate ordinarily *should* be measured by a monetary calculation. Where the property or service is not used commercially, however, that may be “difficult.” *Id.* In those instances, it “may be necessary” to formulate a different measure of damages, or to let the jury simply use its judgment, so long as the jury limits its inquiry to an objective valuation rather than the peculiarities of the plaintiff’s situation. *Id.* In other words, if the objective economic value of property or services can be measured directly, that is preferred. Only when that is not possible or unduly difficult should courts resort to submitting the issue to the jury’s discretion.

Perhaps the best illustration of the distinction between the requirement of subjective jury valuation of certain elements associated with human life, like the enjoyment of life and pain and suffering, versus the objective valuation, by monetary value or calculation, where possible, of losses to personal property, services, and the use of real estate is the particular rules established for the valuation of the loss of a pet or dog. *See syl. pt. 5, Carbasho v. Musulin*, 618 S.E.2d 368, 217 W. Va. 359 (2005) (“Dogs are personal property”). The measure of loss is the objective “fair market value” or other special monetary value, *which must be proved. Id.*, syl. pt. 4; *id.*, syl. pt. 3. Subjective factors, such as sentimental value, cannot be considered. *Id.*, syl. pt. 5.

The rule in West Virginia is clear. When it comes to measures of human life itself and its enjoyment or suffering, damages must be left to the judgment of the jury based on consideration of subjective factors. When it comes to property and services, damages should be subjected to calculation and based on objective monetary value, where possible, and must be based only on objective standards of reasonable people, not the subjective considerations of individual

circumstances. The only thing that makes the instant circumstance somewhat unusual is that Plaintiffs' experts use an objective and published method for valuing a service—tap water—the monetary value of which would otherwise be difficult to measure, because it is a utility and not freely traded, and because residential customers do not use it to produce any commercial output.

**4. Alternative measurements of class members' damages, such as the sum of out-of-pocket expenses and general damages for inconvenience, are subjective and problematic.**

The law is clear that Plaintiffs can claim damages associated with the interruption in the tap water service. Defendants claim that Dr. Rosen's and Mr. Gilbert's method is not a measure of "actual damages" to residents. Def. Mem. Excl. Gilbert at 12. However, Defendants do not propose any particular basis for determining the "actual damages" amounts, even on an individual level, although they do appear to imply that "financial impacts," *id.* at 12–13, the "cost of replacement of water" and "out-of-pocket impacts," *id.* at 7–8, should be factors, as well as "annoyance and inconvenience." *Id.* at 6. Defendants' expert, Jesse David, proposed in his report that "[a]ctual economic losses, if any, experienced by individual residents [are] equal to out-of-pocket expenses and/or the cost of inconveniences due to the disruption." David Rep. at 17; *see also* David Dep. at 205–07.

While adding up receipts or out-of-pocket expenses sounds objective and fair at first blush, when one considers the choices that people had and made, it quickly becomes clear that this method is highly subjective and problematic, *especially* when performed on an individual level. Some class members, for example, may have decided, under the circumstances, that they might as well go on an unplanned vacation, stay in a luxury hotel, or dine out every meal. In those circumstances, expenses paid to the hotel or restaurant are "probably not a very good measure of their losses" because, for example, "[i]f you're getting a dinner that you wouldn't

have otherwise gotten, obviously there is some offsetting benefit.” David Dep. at 219–21. On the other hand, some class members might have decided to suffer through the outage by collecting free bottled water from the government and otherwise going without the ordinary benefits of tap water—cooking, cleaning, bathing, hand-washing, and so on. In such a case, Defendants essentially propose that the entire loss would have to be valued by the jury, picking a number out of the air—or worse, picking a different number out of the air for each individual, after hearing their subjective accounts—as a measure of the inconvenience. David Dep. 217.

In both scenarios, by any objective measure, each class member lost the same service regardless of their spending decisions, and their damages should be approximately equal—or, their losses should vary only based on the amount of the water service they typically used.<sup>10</sup> However, as a practical matter, the jury might be swayed by subjective factors after listening to accounts of peculiar, *subjective* circumstances and considering out-of-pocket expenses based on *subjective* decisions with respect to the valuation of alternative goods and services (such as travel, hotels, and eating out). In fact, apart from the jury’s ability to listen to and consider “subjective” factors, which should not be considered under *Jarrett*, 235 S.E.2d 362, 365, there is no advantage to individual trials, because the water company’s own meter data establishes how much water each customer ordinarily used, and thus how much water they had to go without.

##### **5. “Willingness to pay” is an appropriate, objective measure of damages.**

Defendants criticize the use of the Brozovic Study’s “willingness to pay” model because it is “not measuring the actual impacts in terms of financial impacts” of the loss of water service and because the formula’s “welfare loss” includes “costs” that “the user will never actually have to pay.” Def. Mem. Excl. Gilbert at 13. This criticism is completely misplaced. Loss of use of

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<sup>10</sup> The difference in baseline usage would be considered at the individual claims stage. Rosen Decl., ¶ 25.

property or goods is usually based on the value of the goods or service lost, not the replacement cost of non-fungible alternatives or substitutes, and is a loss that does not even depend on proof that the plaintiff actually replaced or obtained an alternative or substitute.

As Dr. David acknowledged, if he were ascertaining an objective measure of the inconvenience associated with deprivation of tap water, he would use a survey, not impanel a jury and have them listen to different individuals' stories of deprivation. David Dep. at 209–10. “Willingness to pay” surveys (and values derived from them) are intended to measure the value of all of the negatives—costs of substitutes and alternatives and inconvenience of having to get them plus the inconvenience of the deprivation—associated with having to go without a good or service. Rosen Decl., ¶ 24; *accord* David Dep. at 224–25. In other words, although Defendants chide Mr. Gilbert for not knowing exactly what “willingness to pay” measures, Def. Mem. Excl. Gilbert at 12–13, and claim that Dr. Rosen’s explanation of the “willingness to pay” measure is impermissible under the law, *id.* at 13, it is clear that calculations or estimations of the monetary value associated with a good or service are not *per se* inadmissible. Further, it is clear from the record that the method proposed by Dr. Rosen and Mr. Gilbert is more consistent with the requirement that damages for loss of use be measured *objectively* than Defendants’ method.

#### **6. Mr. Gilbert is qualified for his role.**

Defendants’ attacks on Mr. Gilbert’s qualifications are premised on their inaccurate assignment to Mr. Gilbert of responsibility for defending the economics of the model and the economic choices in the model. Mr. Gilbert performed the computations to determine the average baseline use, the average number of days customers were impacted by the DNU order, the amount of water per resident made available by the government, the total number of residents in the KVTP service area, and ran all of the inputs through the Brozovic Study formula to

compute an estimate. *See* Gilbert Rev. Rep. While Mr. Gilbert's role in making these computations may appear relatively minor, that is only because none of Defendants' attacks are addressed to Mr. Gilbert's computations, notwithstanding the fact that he initially made (and then corrected) a relatively large error. Mr. Gilbert is a professional engineer and he is qualified to perform these computations and calculations. Mr. Gilbert also brought to bear his experience and judgment as a professional engineer with experience teaching training courses for FEMA on benefit-cost analysis in disaster mitigation planning, which includes training on the FEMA method for determination the cost of disruption of the water service. *See* Gilbert Dep. at 18–26.

**7. The sensitivity of the model does not invalidate the use of it.**

Defendants offer several examples intended to show that the Brozovic Study formula is highly sensitive to small changes in inputs in an effort to discredit it. Def. Mem. Excl. Gilbert at 15. That the model is sensitive to inputs does not invalidate it, so long as the inputs selected are correct, or at least conservative from the Plaintiffs' perspective. Defendants argue that if Plaintiffs' experts had selected a price elasticity of demand value of -0.51 instead of -0.41, then the estimate would have been dramatically less. While their calculations are accurate, the example doesn't indicate any error rate because the choice of -0.41, if possibly erroneous, was only possibly erroneous in the other direction—i.e., the possibility is that a number with a smaller absolute value, such as -0.35 or -0.26, would be more accurate. *See* Aubuchon Study at 12–13 (noting possibility that -0.35 or -0.26 would be more accurate values in a disruption of short duration); *id.* at 15 (recommending use of a smaller elasticity number than -0.41 for short events); David Dep. 278–87 (conceding that he is aware of published recommendations to use smaller elasticity numbers but not to use bigger numbers and that choice of -0.41 did not inflate estimate).

### **8. Plaintiffs' experts did not cherry-pick the data.**

Defendants also criticize Plaintiffs' experts for using the actual amount of water made available by government agencies during the DNU period in their estimate rather than the 6.6 gallons per day that the Brozovic Study assumed would be made available by the government. Def. Mem. Excl. Gilbert at 17. This criticism is invalid. Plaintiffs' experts used data from the actual event about the number of gallons per person per day that were actually distributed by the government (2.26), rather than assuming a number that turns out to be high.<sup>11</sup> The Brozovic Study assumed 6.6 gallons per person per day, which would have been logistically difficult just to transport in a car, but it is clear from the Brozovic Study that the number that should be entered in the formula in the event of a disruption is the actual amount of water provided. The assumption that the number is equal to 6.6 gallons per day is just a placeholder for their illustration. *See* Brozovic Study at 6.

Defendants also criticize Plaintiffs' experts for the adjustment for the availability of non-potable water for flushing, described by Dr. Rosen in his report at ¶ 13, by removing it from the equation (i.e., subtracting the amount of water typically used for flushing from the estimate of baseline household consumption), which they incorrectly attribute to cherry-picking on Mr. Gilbert's part. Def. Mem. Excl. Gilbert at 17. Defendants characterize the water available for toilet flushing as being available for "sanitation" but this is inaccurate, as "basic sanitation" includes hand-washing and food-preparation and requires "clean water," while elimination of wastes itself can be accomplished without water. Rosen Dep. at 251–52; Gleick, et al., *Basic Water Requirements for Human Activities: Meeting Basic Needs*, Water International, vol.

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<sup>11</sup> This approach was similar to their consideration of baseline water consumption based on local meter data (rather than assuming that class members used the national indoor average of 70 gallons per day, which would dramatically increase the damages estimate).

21:83–92 (1996) (relevant pages attached as Exhibit 11) at 85 (“Access to some water for sanitation . . . decreases the incidence of diseases, increases the frequency of hygienic food preparation and washing, and reduces the consumption of contaminated food products” even though “effective disposal of human wastes can be accomplished with little or no water”).

Defendants claim that removing the water available for flushing from the equation “has the effect of assigning virtually no value to the water [that continued to be usable for flushing] under the Brozovic formula,” Def. Mem. Excl. Gilbert at 17, but this is inaccurate. Mr. Gilbert showed that if water had not been available for flushing—i.e., applying the formula without removing water used for flushing from baseline consumption—the estimated damages would have been \$44.68 per resident per day, rather than \$20.80 per resident per day. *See* Gilbert Rev. Rep. at E3; *see also* Rosen Rep., ¶ 13 (“[t]he effect of accounting for toilet flushing by removing the amounts used for flushing from baseline water consumption is shown to be significant”). The continued availability of water for flushing and the corresponding adjustment to the model reduced estimated losses by over 50%. There is no basis to claim that Plaintiffs assigned virtually no value to non-potable water available for flushing during the DNU period.

#### **9. Plaintiffs’ experts’ method fits the facts and law.**

Lastly, Defendants criticize Plaintiffs’ residential loss methodology because it uses average values for inputs in the aggregate estimate. Def. Mem. Excl. Gilbert at 18–20. Primarily Defendants criticize Plaintiffs’ experts for using the same, published average value (-0.41) for price elasticity of demand and the same baseline value for “water use and consumption habits” (54 gallons per day, which is based on the average of actual residential customers, not published data). The former decision is appropriate and consistent with the requirement that damages for loss of the use of products be “measured by an objective standard of ordinary persons acting

reasonably under the given conditions.” *Jarrett*, 235 S.E.2d at 365. The determination of each class member’s subjective price elasticity of demand for tap water, if possible, would necessarily involve the subjective valuation of tap water rather than the required objective standard.

The decision to use an average baseline consumption value for calculating aggregate, or class-wide, residential losses, followed by computing each individual class member’s or household’s award based on the formula with that member’s or household’s individual meter-based consumption level with the aid of claims forms,<sup>12</sup> *see* Rosen Rep., ¶ 25, is consistent with the rule that damages in class actions “may be determined on a classwide, or aggregate, basis . . . where computerized records, supplemented by claims forms, provide a means to distribute damages to injured class members in the amount of their respective damages.” *NASDAQ*, 169 F.R.D. at 526. The cases cited by Defendants rejecting the use of averages to satisfy certain inapplicable requirements of a “common impact” are inapposite. Def. Mem. Excl. Gilbert at 18–19. There is no question that all or substantially all of the residential class members—defined as persons supplied in their residences by tap water subject to the DNU order—were impacted similarly. The only potential individual questions are the extent of their damages, which Plaintiffs have shown can be determined by common application of the Brozovic formula—using the objective valuation of tap water represented by the average price elasticity of demand and each class member’s or household’s individual typical consumption based on meter records.

### **Conclusion**

For the foregoing reasons, Defendants’ Joint Motions to Exclude the Expert Testimony of Harvey Rosen, Ph.D. and Seward G. Gilbert should be denied.

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<sup>12</sup> Defendants’ meter data is organized by address, not customer or household. Individual baseline consumption amounts cannot be determined until claimants indicate on claims forms the length of time that they resided at the address in question (where they lived on January 9, 2014).



Respectfully submitted,

By Counsel,

/s/ Alex McLaughlin

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**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT WEST VIRGINIA**

**CRYSTAL GOOD, et al.,**

**Plaintiffs,**

**v.**

**AMERICAN WATER WORKS  
COMPANY, INC, , et al.,**

**Defendants.**

**Case No.: 2:14-CV-1374**

**Consolidated with:**

**Case No. 2:14-11011**

**Case No. 2:14-13164**

**Case No. 2:14-13454**

**CERTIFICATE OF SERVICE**

I, Alex McLaughlin, hereby certify that on the 10th day of August, 2015, I electronically filed Plaintiffs' Memorandum of Law in Opposition to Defendants' Joint Motion to Exclude the Expert Testimony of Harvey Rosen, Ph.D. with the Clerk of the Court using the CM/ECF system, which will send notification of the filing to all counsel of record.

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